

**Remarks/Arguments**

Applicants reply to the Final Office Action dated January 29, 2009, within the three month shortened statutory period for reply. The Examiner rejected all pending claims. Applicants cancel claims 26-56 and 58 without prejudice or disclaimer to filing one or more claims directed to similar subject matter. Support for the amendments may be found in the originally-filed specification, claims, and figures. Reconsideration of this application is respectfully requested.

**Examiner's Response to Previously Presented Arguments and Interview Summary**

Preliminarily, prior to addressing the outstanding Office Action's rejections and as discussed in the Examiner interview on April 10, 2009, Applicants respectfully submit that the presently claimed invention differs from the references of record, at least in part because the presently claimed invention provides suitable hydrolytic stability in addition to a level of oxidative protection. To clarify this, at the Examiner's suggestion, Applicants positively recite the same in claim 1, which now recites, "imparting hydrolytic stability to the carbon-carbon composite by...."

Applicants submit that the present specification discusses hydrolytic stability in, for example, among other places, paragraphs 39, 97. Specifically, for example, hydrolytic stability may be achieved by using the metal to phosphate atomic ratios as taught by the present specification which are significantly lower than those taught by the cited references.

In this regard, Applicants have unexpectedly discovered that such significantly lower metal to phosphate atomic ratios provide a beneficial level of hydrolytic stability. For example, claim 1 recites "wherein said oxidation inhibiting composition has a metal to phosphate atomic ratio of 0.26 to 0.4." As further clarified in new claim 63, the use of magnesium salts in the oxidation inhibiting composition of claim 1 is advantageous.

That being said, in response to Applicants' arguments presented on December 29, 2008, the Office Action contends that it would have been obvious to one skilled in the art to modify United States Patent 5,759,622 to Stover ("Stover") using the teachings of United States Patent 4,454,193 to Block ("Block"). Stover teaches a composition and method of inhibiting catalyzed oxidation of carbon-carbon composites, but fails to teach a method wherein the additional metal salt comprises an alkaline earth metal salt comprising magnesium nitrate.

Additionally, as discussed in more detail below, Applicants submit that the disclosure of Block teaches away from the presently claimed metal to phosphate atomic ratio. In particular, Block teaches the importance of oxidative protection and provides examples and disclosures of materials and methods to enhance oxidative protection. However, Block's materials and methods do not contemplate hydrolytic stability or, as Applicants have discovered, metal to phosphate atomic ratios lower than those taught in the cited references provide a level of oxidative protection in addition to superior hydrolytic stability.

Accordingly, in light of the above comments and the discussion below, Applicants submit the claims as currently recited are patentable over the cited references.

**Claim Rejections under 35 U.S.C. § 103(a)**

*Claims 1-4, 8-23, 25, 26, 27, 57, and 59-61*

The Examiner rejects claims 1-4, 8-23, 25, 26, 27, 57, and 59-61 under 35 U.S.C. 103(a) as being unpatentable over Stover in view of Block. Applicants respectfully disagree with these rejections, but amend the claims in order to clarify the patentable aspects of the claims and to expedite prosecution.

Stover and Block, alone or in combination, do not disclose or contemplate "imparting hydrolytic stability to the carbon-carbon composite" as positively recited in the present claim 1. Specifically, Applicants submit that Stover teaches a composition and method of inhibiting catalyzed oxidation of carbon-carbon composites. (See Abstract). However, as the Examiner states in the outstanding Office Action, Stover does not teach a method wherein the additional metal salt comprises an alkaline earth metal salt comprising magnesium nitrate.

Additionally, Applicants submit that while Block discloses that magnesium nitrate may be used for oxidation protection (see Block, column 5, lines 56 – 61), Applicants note that, for the purposes of oxidation protection, Block teaches that "[t]he trivalent metal cations therefore require 3 equivalents of phosphorus and the divalent metal cations **require** 2 equivalents of phosphorus." [emphasis added]. (See col. 6, lines 12-14). Further, Block discloses in Table 1 that, when using magnesium nitrate, a metal to phosphate atomic ratio of at least 1:2 (i.e., **0.5**) **must** be used. (See Table 1, col. 6, line 60).

As discussed above, neither Stover, Block, nor any combination thereof disclose or contemplate "imparting hydrolytic stability to the carbon-carbon composite" as positively recited in the present claim 1. Stover and Block only discuss oxidative protection and one skilled in the

art would only use their teachings and contemplations for that purpose. As Block requires the use of a metal to phosphate atomic ratio of at least 0.5 for oxidation protection, even if one were to combine the teachings of Block and Stover, one would only use a metal to phosphate atomic ratio of 0.5 or above. In this regard, Block specifically teaches away from using any lesser ratio.

In contrast, Applicants' claim 1 recites, "wherein said oxidation inhibiting composition has a metal to phosphate atomic ratio of **0.26 to 0.4**." As discussed above, Applicants have discovered that using a significantly lower range of the ratio provides enhances hydrolytic stability while still providing oxidative protection. (See, e.g., [0097] and FIG. 1). As neither Stover nor Block disclose or contemplate, at least, "a metal to phosphate atomic ratio of 0.26 to 0.4," Applicants submit that claim 1 is allowable over the cited references.

Additionally, dependent claims 3-4, 8-23, 25, 26, 27, 57, and 59-61 variously depend from independent claim 1 and Applicants thus assert that dependent claims 3-4, 8-23, 25, 26, 27, 57, and 59-61 are patentable for at least the same reasons for differentiating independent claim 1, as well as in view of their own respective features. As such, Applicants respectfully request that this rejection be withdrawn.

Claim 2 is now canceled, so Applicants submit that this rejection is moot.

*Claims 1-4, 8-10, 14-23, 25, 26, 27, 57, and 59-61*

The Examiner rejects claims 1-4, 8-10, 14-23, 25, 26, 27, 57, and 59-61 under 35 U.S.C. 103(a) as being unpatentable over Stover in view of U.S. Patent No. 3,342,627 to Paxton ("Paxton"). Applicants respectfully disagree with these rejections, but amend the claims in order to clarify the patentable aspects of the claims and to expedite prosecution.

As noted above, Stover teaches a composition and method of inhibiting catalyzed oxidation of carbon-carbon composites. Applicants further note that Paxton discloses the use of magnesium phosphate and zinc phosphate for oxidation protection. (See col. 2, lines 53-66).

However, neither Stover, Paxton nor any combination thereof disclose or contemplate "imparting hydrolytic stability to the carbon-carbon composite" as positively recited in the present claim 1. Further, as discussed above, Applicants' claim 1 includes, at least, "wherein said oxidation inhibiting composition has a metal to phosphate atomic ratio of 0.26 to 0.4." Neither Paxton nor Stover, alone or in combination, disclose or contemplate such a range. Accordingly, Applicants submit that claim 1 is allowable over the cited references.

Additionally, dependent claims 3-4, 8-10, 14-23, 25, 26, 27, 57, and 59-61 variously depend from independent claim 1 and Applicants thus assert that dependent claims 3-4, 8-10, 14-23, 25, 26, 27, 57, and 59-61 are patentable for at least the same reasons for differentiating independent claim 1, as well as in view of their own respective features. As such, Applicants respectfully request that this rejection be withdrawn.

Claim 2 is now canceled, so Applicants submit that this rejection is moot.

*Claims 1-4, 8, 11-23, 25, 26, 27, 57, and 59-61*

The Examiner rejects claims 1-4, 8, 11-23, 25, 26, 27, 57, and 59-61 under 35 U.S.C. 103(a) as being unpatentable over Stover in view of U.S. Patent No. 4,726,995 to Chiu ("Chiu"). Applicants respectfully disagree with these rejections but amend the claims in order to clarify the patentable aspects of the claims and to expedite prosecution.

As noted above, Stover teaches a composition and method of inhibiting catalyzed oxidation of carbon-carbon composites. Applicants further note that Chiu discloses "oxidation retarded graphite." (See Title). More specifically, Chiu discloses that a halide ion disposed on the surface of a phosphate-treated electrode may achieve oxidation protection. (See col. 2, lines 60-62).

However, neither Stover, Chiu nor any combination thereof disclose or contemplate "imparting hydrolytic stability to the carbon-carbon composite" as positively recited in the present claim 1. As discussed above, Applicants' claim 1 includes, at least, "wherein said oxidation inhibiting composition has a metal to phosphate atomic ratio of 0.26 to 0.4." Neither Chiu nor Stover, alone or in combination, disclose or contemplate such a range. Accordingly, Applicants submit that claim 1 is allowable over the cited references.

Additionally, dependent claims 3-4, 8, 11-23, 25, 26, 27, 57, and 59-61 variously depend from independent claim 1, and Applicants thus assert that dependent claims 3-4, 8, 11-23, 25, 26, 27, 57, and 59-61 are patentable for at least the same reasons for differentiating independent claim 1, as well as in view of their own respective features. As such, Applicants respectfully request that this rejection be withdrawn.

Claim 2 is now canceled, so Applicants submit that this rejection is moot.

*Claim 24*

The Examiner rejects claims under 35 U.S.C. 103(a) as being unpatentable over Stover in view of Block and further in view of United States Patent 4,425,407 to Galasso, et al. ("Galasso"). The Examiner further rejects the claim over Stover in view of Paxton and Galasso. Applicants respectfully disagree with this rejection, but amend claim 1, from which claim 24 depends, in order to clarify the patentable aspects of the claims and to expedite prosecution.

Stover and Block are discussed above. Applicants further note that Galasso discloses a silicon carbide deposition on a carbon-carbon composite material.

However, neither Stover, Galasso, Block, nor any combination thereof disclose or contemplate "imparting hydrolytic stability to the carbon-carbon composite" as positively recited in the present claim 1.

Dependent claim 24 variously depend from independent claim 1, so Applicants assert that dependent claim 24 is patentable for at least the same reasons for differentiating independent claim 1, as well as in view of its own respective features. Applicants respectfully request that this rejection be withdrawn.

#### **New Claims**

New claim 62-66 variously depend from independent claim 1, so Applicants assert that new claims 62-66 are patentable for at least the same reasons for differentiating independent claim 1, as well as in view of their own respective features.

### Conclusion

Applicants submit that all pending claims are in condition for allowance. Should the Examiner have questions, Applicants request that the Examiner contact the undersigned representative at the telephone number listed below. The Commissioner is hereby authorized to charge any fees, which may be required, or credit any overpayment, to Deposit Account No. 19-2814. **This statement does NOT authorize charge of the issue fee.**

Respectfully submitted,

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